WHAT IS CLAIMED IS:

1. A planar motor comprising: a stator having a coil; and a mover having a magnetic flux generator, the planar motor moving the mover on a movement plane, further comprising:

a controller that detects position information of the mover based on information concerning an inductance of the coil, the inductance varying in accordance with the relative-position relation between the stator and the mover.

2. A planar motor according to claim 1,

wherein the stator comprises a plurality of coils, and

wherein the controller detects position information of the mover based on an inductance distribution with respect to the plurality of coils, the inductance distribution being generated in accordance with the relative-position relation between the stator and the mover.

3. A planar motor according to claim 2,

wherein the stator comprises a coil-supporting member that is made of a magnetic material and that supports the plurality of coils.

4. A planar motor according to claim 1,

wherein the position information of the mover includes at least one of a piece of position information with respect to a first axis direction and a second axis direction that define the movement plane, and a piece of position information with respect to rotation about a third axis perpendicular to the first axis direction and the second axis direction.

5. A planar motor according to claim 1,

wherein the controller controls an electric current supplied to the coil based on a detection result of position information of the mover.

6. A planar motor according to claim 1,

wherein the magnetic flux generator comprises a plurality of magnets magnetized in a direction almost perpendicular to the movement plane.

7. A planar motor according to claim 6,

wherein the magnetic flux generator further comprises a magnet-supporting member that is made of a magnetic material and that supports the plurality of magnets.

8. A planar motor according to claim 1,

wherein the magnetic flux generator comprises a plurality of magnets magnetized in a direction not perpendicular to the movement plane.

9. A planar motor according to claim 1, further comprising:

an inductance measurement unit to measure an inductance of the coil.

10. A planar motor comprising: a stator having a coil; and a mover having a magnet, the planar motor moving the mover on a movement plane, further comprising:

a controller that controls position of the mover based on information concerning an inductance of the coil, the inductance varying in accordance with the relative-position relation between the stator and the mover.

11. A planar motor according to claim 10,

wherein the stator comprises a plurality of coils, and

wherein the controller controls position of the mover based on an inductance distribution with respect to the plurality of coils, the inductance distribution being generated in accordance with the relative-position relation between the stator and the mover.

12. A planar motor according to claim 10, further comprising:

an inductance measurement unit to measure an inductance of the coil.

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13. A stage unit comprising:

a planar motor according to any of claims 1 through 12; and

a stage member connected with the mover.

14. A stage unit comprising:

a stage member moving on a movement plane;

a driving unit comprising: a mover that has a magnetic flux generator and that is provided on the stage member and a stator having a plurality of coils, the driving unit driving the stage member by electromagnetic force;

an inductance measurement unit to measure inductances of the coils; and

a controller to control respective electric currents supplied to the plurality of coils based on measurement results by the inductance measurement unit.

15. A stage unit according to claim 14,

wherein the magnetic flux generator comprises a plurality of magnets magnetized in a direction almost perpendicular to the movement plane.

16. A stage unit according to claim 15,

wherein the stage member is made of a non-magnetic material, and

wherein the magnetic flux generator further comprises a magnet-supporting member that is made of a

magnetic material and that supports the plurality of magnets.

17. A stage unit according to claim 14,

wherein the magnetic flux generator comprises a plurality of magnets magnetized in a direction not perpendicular to the movement plane.

18. A stage unit according to claim 14,

wherein the stator comprises a coil-supporting member that is made of a magnetic material and that supports the plurality of coils.

19. A stage unit according to claim 18, further comprising:

a position detection unit to detect position of the stage member, and

wherein the controller controls respective electric currents supplied to the plurality of coils based on at least one of a detection result by the position detection unit and a set of measurement results by the inductance measurement unit.

20. A stage unit according to claim 19,

wherein when the position detection unit can detect position of the stage member, the controller controls position of the stage member by controlling respective electric currents supplied to the plurality of coils

based on a detection result by the position detection unit, and

wherein when the position detection unit cannot detect position of the stage member, the controller controls position of the stage member by controlling respective electric currents supplied to the plurality of coils based on measurement results by the inductance measurement unit.

21. An exposure apparatus comprising:

an illumination system sending out illumination light for exposure;

a stage unit according to claim 13 on which an object to be arranged in a path of the illumination light is mounted.

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22. An exposure apparatus comprising:

an illumination system sending out illumination light for exposure;

a stage unit according to any of claims 14 through 18, on which an object to be arranged in a path of the illumination light is mounted.

23. An exposure apparatus according to claim 22,

wherein the object is a substrate which is exposed by the illumination light, and onto which a predetermined pattern is transferred.

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24. An exposure apparatus comprising:

an illumination system sending out illumination light for exposure;

a stage unit according to claim 19 or 20, on which an object to be arranged in a path of the illumination light is mounted.

25. An exposure apparatus according to claim 24, wherein the object is a substrate which is exposed by the illumination light, and onto which a predetermined pattern is transferred.

26. An exposure apparatus according to claim 24, wherein when the position detection unit can detect position of the stage member, the controller controls position of the stage member by controlling respective electric currents supplied to the plurality of coils based on a detection result by the position detection unit, wherein when the position detection unit cannot detect position of the stage member, the controller controls position of the stage member by controlling respective electric currents supplied to the plurality of coils based on measurement results by the inductance measurement unit, and

wherein upon exposure, when it is judged that the reason why the position detection unit cannot detect position of the stage member is the stage member being out of a range over which the position detection unit can

detect position thereof, the controller restores the stage member to within the detection range of the position detection unit based on measurement results by the inductance measurement unit.

27. An exposure apparatus according to claim 26, wherein after restoration of the stage member, the controller continues to control position of the stage member for exposure based on a detection result by the position detection unit.

28. An exposure apparatus according to claim 26, wherein after restoration of the stage member, the controller moves the stage member to an initial position based on a detection result by the position detection unit.

29. An exposure apparatus according to claim 26, wherein when the position detection unit can detect position of the stage member, the controller controls position of the stage member by controlling respective electric currents supplied to the plurality of coils based on a detection result by the position detection unit, wherein when the position detection unit cannot detect position of the stage member, the controller controls position of the stage member by controlling respective electric currents supplied to the plurality of coils based on measurement results by the inductance

measurement unit, and

wherein upon exposure, when the position detection unit cannot detect position of the stage member, the controller controls position of the stage member for exposure based on measurement results by the inductance measurement unit.

30. A device on which a predetermined pattern is formed, and which is manufactured by using an exposure apparatus according to claim 21.

31. A device on which a predetermined pattern is formed, and which is manufactured by using an exposure apparatus according to claim 22.

32. A device on which a predetermined pattern is formed, and which is manufactured by using an exposure apparatus according to claim 24.

33. A driving method that drives a planar motor comprising: a stator having a coil; and a mover having a magnetic flux generator, so as to move the mover on a movement plane,

wherein position information of the mover is detected based on information concerning an inductance of the coil, the inductance varying in accordance with the relative-position relation between the stator and the mover.

34. A driving method of a planar motor according to claim 33,

wherein the stator comprises a plurality of coils, and

wherein position information of the mover is detected based on an inductance distribution with respect to the plurality of coils, the inductance distribution being generated in accordance with the relative-position relation between the stator and the mover.

35. A driving method of a planar motor according to claim 34,

wherein the stator comprises a coil-supporting member that is made of a magnetic material and that supports the plurality of coils.

36. A driving method of a planar motor according to claim 34,

wherein inductances of the plurality of coils are measured individually.

37. A driving method of a planar motor according to claim 33,

wherein the position information of the mover includes at least one of a piece of position information with respect to a first axis direction and a second axis direction that define the movement plane, and a piece of

position information with respect to rotation about a third axis perpendicular to the first axis direction and the second axis direction.

38. A driving method of a planar motor according to claim 33,

wherein an electric current supplied to the coil is controlled based on a detection result of position information of the mover.

39. A driving method of a planar motor according to claim 33,

wherein the magnetic flux generator comprises a plurality of magnets magnetized in a direction almost perpendicular to the movement plane.

40. A driving method of a planar motor according to claim 39,

wherein the magnetic flux generator further comprises a magnet-supporting member that is made of a magnetic material and that supports the plurality of magnets.

41. A driving method of a planar motor according to claim 33,

wherein the magnetic flux generator comprises a plurality of magnets magnetized in a direction not perpendicular to the movement plane.

42. A driving method that drives a planar motor comprising: a stator having a coil; and a mover having a magnet, so as to move the mover on a movement plane,

wherein position of the mover is controlled based on information concerning an inductance of the coil, the inductance varying in accordance with the relative-position relation between the stator and the mover.

43. A driving method of a planar motor according to claim 42,

wherein the stator comprises a plurality of coils, and

wherein position of the mover is controlled based on an inductance distribution with respect to the plurality of coils, the inductance distribution being generated in accordance with the relative-position relation between the stator and the mover.

44. A driving method of a planar motor according to claim 43,

wherein inductances of the plurality of coils are measured individually.

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45. A driving method that drives a stage unit comprising a planar motor which comprises a stator having a coil and a mover having a magnetic flux generator, and which moves the mover on a movement plane, and a stage

member moving as one entity with the mover,

wherein upon moving the stage member is used a driving method of a planar motor according to any of claims 33 through 44.

46. A driving method that drives a stage unit comprising a stage member moving on a movement plane and a driving unit comprising a mover which has a magnetic flux generator and which is provided on the stage member and a stator having a plurality of coils and driving the stage member by electromagnetic force,

wherein respective electric currents supplied to the plurality of coils are controlled based on results of measuring inductances of the plurality of coils.

47. A driving method of a stage unit according to claim 46,

wherein the magnetic flux generator comprises a plurality of magnets magnetized in a direction almost perpendicular to the movement plane.

48. A driving method of a stage unit according to claim 47,

wherein the stage member is made of a non-magnetic material, and

wherein the magnetic flux generator further comprises a magnet-supporting member that is made of a magnetic material and that supports the plurality of

magnets.

49. A driving method of a stage unit according to claim 46,

wherein the magnetic flux generator comprises a plurality of magnets magnetized in a direction not perpendicular to the movement plane.

50. A driving method of a stage unit according to claim 46,

wherein the stator comprises a coil-supporting member that is made of a magnetic material and that supports the plurality of coils.

51. A driving method of a stage unit according to claim 50,

wherein the stage unit further comprises a position detection unit to detect position of the stage member, and

wherein respective electric currents supplied to the plurality of coils are controlled based on at least one of a detection result by the position detection unit and a set of measurement results of the inductances.

52. A driving method of a stage unit according to claim 51,

wherein when the position detection unit can detect position of the stage member, position of the stage

member is controlled by controlling respective electric currents supplied to the plurality of coils based on the result of detecting position, and

wherein when the position detection unit cannot detect position of the stage member, position of the stage member is controlled by controlling respective electric currents supplied to the plurality of coils based on measurement results of the inductances.

53. An exposure method comprising the steps of sending out illumination light for exposure and, by driving a stage unit on which an object is mounted, moving the object relative to a path of the illumination light,

wherein upon driving the stage unit is used a driving method of a stage unit according to claim 45.

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54. An exposure method comprising the steps of sending out illumination light for exposure and, by driving a stage unit on which an object is mounted, moving the object relative to a path of the illumination light,

wherein upon driving the stage unit is used a driving method of a stage unit according to any of claims 46 through 50.

55. An exposure method according to claim 54, wherein the object is a substrate which is exposed by the

illumination light, and onto which a predetermined pattern is transferred.

56. An exposure method comprising the steps of sending out illumination light for exposure and, by driving a stage unit on which an object is mounted, moving the object relative to a path of the illumination light,

wherein upon driving the stage unit is used a driving method of a stage unit according to claim 51 or 52.

57. An exposure method according to claim 56,

wherein the object is a substrate which is exposed by the illumination light, and onto which a predetermined pattern is transferred.

58. An exposure method according to claim 56,

wherein when the position detection unit can detect position of the stage member, position of the stage member is controlled by controlling respective electric currents supplied to the plurality of coils based on the result of detecting position, and wherein when the position detection unit cannot detect position of the stage member, position of the stage member is controlled by controlling respective electric currents supplied to the plurality of coils based on measurement results of the inductances, and

wherein upon exposure, when it is judged that the reason why the position detection unit cannot detect position of the stage member is the stage member being out of a range over which the position detection unit can detect position thereof, the stage member is restored to within the detection range of the position detection unit based on measurement results of the inductances.

59. An exposure method according to claim 58,

wherein after restoration of the stage member, position of the stage member continues to be controlled for exposure based on a detection result by the position detection unit.

60. An exposure method according to claim 58,

wherein after restoration of the stage member, the stage member is moved to an initial position based on a detection result by the position detection unit.

61. An exposure method according to claim 56,

wherein when the position detection unit can detect position of the stage member, position of the stage member is controlled by controlling respective electric currents supplied to the plurality of coils based on a result of detecting position of the stage member, wherein when the position detection unit cannot detect position of the stage member, position of the stage member is controlled by controlling respective electric currents

supplied to the plurality of coils based on measurement results of the inductances, and

wherein upon exposure, when the position detection unit cannot detect position of the stage member, position of the stage member is controlled for exposure based on measurement results of the inductances.

62. A device manufacturing method including a lithography process, wherein the lithography process uses an exposure method according to claim 53.

63. A device manufacturing method including a lithography process, wherein the lithography process uses an exposure method according to claim 54.

64. A device manufacturing method including a lithography process, wherein the lithography process uses an exposure method according to claim 56.

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